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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/853,102	05/10/2001	Moon-Jung Ko	678-614 (P9725)	5815

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EXAMINER

DANIEL JR, WILLIE J

ART UNIT	PAPER NUMBER
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2686

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/853,102	Applicant(s) KO, MOON-JUNG	
	Examiner Willie J. Daniel, Jr.	Art Unit 2686	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-8 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to applicant's RCE filed on 28 June 2005 and amendment filed on 28 April 2005. **Claims 1-2** and **4-8** are now pending in the present application.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 28 June 2005 has been entered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and **4-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Lim (US 6,628,974 B1)** in view of **Iwata et al. (hereinafter Iwata) (US 5,723,959)** and **Lemirande (US 4,394,607)**.

Regarding **Claim 1**, Lim teaches of an automatically and manually folded cellular phone (1) which reads on the claimed "portable wireless terminal" having at least a main body (3) and a sub-body (2) installed on the main body (3) so as to be opened and closed

comprising:

a first sensor (51) for sensing a complete opening of the sub-body (2) from the main body (3) (see Figs. 5 and 6);

a second sensor (52) for sensing a complete closing of the sub-body (2) onto the main body (3) (see Figs. 5 and 6);

an driving section (11) which reads on the claimed "opening/closing device" for opening/closing the sub-body (2) in accordance with a control (5) of opening/closing of the sub-body (2) and having a motor (12) housed inside of the terminal (1) (see abstract; col. 4, line 55 - col. 5, line 24; col. 6, line 48 - col. 7, line 49; col. 8, lines 55-57; col. 9, lines 29-31; col. 10, lines 35-36; Figs. 5-6, 10-12, and 20). Lim fails to disclose having the features a motor overcurrent monitoring section having a current sensing resistor located between a first node and a second node for monitoring current flow to the motor to determine an overload condition of the motor determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node; and a control device for controlling the operation of motor in accordance with the overload condition as determined by the motor overcurrent monitoring section when complete opening/closing of the sub-body is sensed by the first and the second sensors when the opening/closing device automatically opens/closes the sub-body. However, the examiner maintains that the features a motor overcurrent monitoring section for monitoring current flow to the motor to determine an overload condition of the motor; and a control device for controlling the operation of motor in accordance with the overload condition as determined by the motor overcurrent monitoring section when complete opening/closing of the sub-body

is sensed by the first and the second sensors when the opening/closing device automatically opens/closes the sub-body was well known in the art, as taught by Iwata.

In the same field of endeavor, Iwata teaches of having the features a motor lock detection circuit (88) which reads on the claimed “motor overcurrent monitoring section” for monitoring current flow to the motor (12) to determine an overload condition of the motor (12) (see col. 4, lines 1-5; col. 5, line 66 - col. 6, line 10; Fig. 1), where the detection circuit is connected to a resistor (18); and

a control device (10) for controlling operation of the motor (12) in accordance with the overload condition as determined by the motor overcurrent monitoring section (88) when complete opening/closing (raising/lowering) of the window glass which reads on the claimed “sub-body” is sensed by the first and the second sensors when the opening/closing (raising/lowering) device automatically opens/closes (raising/lowering) the sub-body (see col. 4, lines 1-5; col. 5, line 66 - col. 6, line 10; col. 11, line 64 - col. 12, line 3; Fig. 1), where the electric motor has an overload detection circuit for monitoring the current of the complete raising/lowering of the window.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata to have the features a motor overcurrent monitoring section for monitoring current flow to the motor to determine an overload condition of the motor; and a control device for controlling the operation of motor in accordance with the overload condition as determined by the motor overcurrent monitoring section when complete opening/closing of the sub-body is sensed by the first and the second sensors when the opening/closing device automatically opens/closes the sub-

body, in order to have a motor that that is capable of raising/lowering (opening/closing) an object (e.g., window glass) which has a controlling device to prevent faulty operation and maintain stability, as taught by (see Iwata - abstract, col. 2, lines 30-62; col. 11, line 64 - col. 12, line 3). The combination of Lim and Iwata fails to disclose having the feature having a current sensing resistor located between a first node and a second node determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node. However, the examiner maintains that the feature having a current sensing resistor located between a first node and a second node determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node was well known in the art, as taught by Lemirande.

In the same field of endeavor, Lemirande discloses the feature having a current sensing resistor (R44) located between a first node and a second node determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node (see col. 2, lines 6-10; col. 4, lines 9-18, 29-30, 55-62, abstract; Figs. 2, 4), where the load monitoring circuit (34) includes a current sensing resistor (R44) for monitoring the difference of the current flowing from one node (e.g., endpoint) of the resistor to the other node in which current flow is in proportion to the amount of power (e.g., voltage) supplied to the motor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata with Lemirande to have the feature having a current sensing resistor located between a first node and a second node

determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node, in order to have a load monitoring circuit which stops the motor during current overload, as taught by Lemirande (see col. 1, line 67 - col. 2, line 2; col. 7, lines 61-64).

Regarding **Claim 4**, Lim teaches of a method for controlling opening/closing of a sub-body (1) in a foldable portable wireless terminal (1) having at least a main body (3), a sub-body (1) installed on the main body (3) so as to be openable and closable, a first sensor (52) installed in the main body (3) for sensing a complete opening of the sub-body from the main body, and a second sensor (51) installed in the main body (3) and the sub-body (2) for sensing a complete closing of the sub-body onto the main body (3) (see col. 7, lines 4-32, 49-57; col. 8, lines 43-49; Figs. 6, 12), where the position detection section (50) has position detectors (sensors) integrally connected in the main-body and sub-body, the method comprising the steps of:

determining whether or not a complete opening/closing of the sub-body (2) is sensed by the first and the second sensors (50) during automatic opening/closing of the sub-body (2) (see abstract; col. 4, lines 55 - col. 5, line 24; col. 6, lines 48 - col. 7, line 49; Figs. 5-6 and 10-12). Lim fails to disclose the features determining an overload condition of a motor housed inside of the terminal based on current supplied to the motor if incomplete opening/closing of the sub-body is sensed by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node; and controlling operation of the motor in accordance with the determined

overload condition. However, the examiner maintains that the features determining an overload condition of a motor housed inside of the terminal based on current supplied to the motor if incomplete opening/closing of the sub-body is sensed; and controlling operation of the motor in accordance with the determined overload condition was well known in the art, as taught by Iwata.

Iwata further teaches of having the features determining an overload condition of a motor (12) housed inside of the terminal based on current supplied to the motor if incomplete opening/closing (raising/lowering) of the sub-body is sensed (see col. 6, lines 11-15; col. 7, line 51 - col. 8, line 62; Fig. 1), where a foreign object is detected to prevent the raising/lowering of the window and the motor is controlled according to the overload condition; and

controlling operation of the motor (12) in accordance with the determined overload condition (see col. 6, lines 11-15; col. 7, line 51 - col. 8, line 62; Fig. 1), where the motor is controlled according to the detected overload condition.

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata to have the features determining an overload condition of a motor housed inside of the terminal based on current supplied to the motor if incomplete opening/closing of the sub-body is sensed; and controlling operation of the motor in accordance with the determined overload condition, in order to have a motor that that is capable of raising/lowering (opening/closing) an object (e.g., window glass) which has a controlling device to prevent faulty operation and maintain stability, as taught by Iwata (see abstract, col. 2, lines 30-62; col. 11, line 64 - col. 12, line 3).

The combination of Lim and Iwata fails to disclose having the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node. However, the examiner maintains that the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node was well known in the art, as taught by Lemirande.

Lemirande further discloses the feature by using a current sensing resistor (R44) located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node (see col. 2, lines 6-10; col. 4, lines 9-18, 29-30, 55-62, abstract; Figs. 2, 4), where the load monitoring circuit (34) includes a current sensing resistor (R44) for monitoring the difference of the current flowing from one node (e.g., endpoint) of the resistor to the other node in which current flow is in proportion to the amount of power (e.g., voltage) supplied to the motor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata with Lemirande to have the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node, in order to

have a load monitoring circuit which stops the motor during current overload, as taught by Lemirande (see col. 1, line 67 - col. 2, line 2; col. 7, lines 61-64).

Regarding **Claim 5**, Lim teaches of having a motor (12) (see col. 10, line 35; Fig. 20). Lim fails to disclose having the feature wherein the determination of the overload condition of the motor is made based on a voltage difference corresponding to a current difference between the current supplied to the motor in normal operation and the current supplied to the motor in the overload condition. However, the examiner maintains that the feature wherein the determination of the overload condition of the motor is made based on a voltage difference corresponding to a current difference between the current supplied to the motor in normal operation and the current supplied to the motor in the overload condition was well known in the art, as taught by Iwata.

The combination of Iwata and Lemirande as applied in claim 4, in addition Iwata further teaches of having the feature

wherein the determination of the overload condition of the motor (12) is made based on a voltage difference corresponding to a current difference between the current supplied to the motor in normal operation and the current supplied to the motor in the overload condition (col. 5, line 66 - col. 6, line 17; col. 7, line 51 - col. 8, line 14; Figs. 1-2), where the current-voltage difference is used to determine the overload condition of the motor.

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim, Iwata, and Lemirande to have the feature wherein the determination of the overload condition of the motor is made based on a voltage difference corresponding to a current difference between the current supplied to the

motor in normal operation and the current supplied to the motor in the overload condition, in order to have a motor that is capable of raising/lowering (opening/closing) an object (e.g., window glass) which has a controlling device to prevent faulty operation and maintain stability (see Iwata - abstract, col. 2, lines 30-62; col. 11, line 64 - col. 12, line 3).

Regarding **Claim 6**, Lim teaches a method for controlling opening/closing of a sub-body (2) in a foldable portable wireless terminal (1) having a main body (3) and a sub-body (2) installed on the main body (3) so as to be openable and closable, the method comprising the steps of:

operating a motor (12) for automatically opening/closing the sub-body in accordance with an input by a user (see abstract; column 4, lines 55 - column 5, line 24; column 8, lines 53-57; column 9, lines 29-31; col. 10, line 35; Figs. 5, 12 and 20). Lim fails to disclose having the features determining an overload condition of the motor for opening/closing the sub-body based on a voltage difference corresponding to a current difference between the current supplied to the motor in a normal operation and the current supplied to the motor in the overload condition determining the overload condition of motor by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node; and controlling operation of the motor for opening/closing the sub-body in accordance with the determined overload condition.

However, the examiner maintains that the features determining an overload condition of the motor for opening/closing the sub-body based on a voltage difference corresponding to a current difference between the current supplied to the motor in a normal operation and the

current supplied to the motor in the overload condition determining the overload condition of motor; and controlling operation of the motor for opening/closing the sub-body in accordance with the determined overload condition was well known in the art, as taught by Iwata.

Iwata further teaches of having the features

determining an overload condition of the motor for opening/closing (raising/lowering) the sub-body based on a voltage difference corresponding to a current difference between the current supplied to the motor (12) in a normal operation and the current supplied to the motor (12) in the overload condition (col. 5, line 66 - col. 6, line 17; col. 7, line 51 - col. 8, line 62; Figs. 1-2), where the current-voltage is determine to the overload condition of the motor; and

controlling operation of the motor (12) for opening/closing (raising/lowering) the sub-body in accordance with the determined overload condition (see col. 6, lines 11-15; col. 7, line 51 - col. 8, line 62; Fig. 1), where the motor is controlled according to the detected overload condition.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata to have the feature determining an overload condition of the motor for opening/closing the sub-body based on a voltage difference corresponding to a current difference between the current supplied to the motor in a normal operation and the current supplied to the motor in the overload condition determining the overload condition of motor; and controlling operation of the motor for opening/closing the sub-body in accordance with the determined overload condition, in order to have a motor that that is capable of raising/lowering (opening/closing) an object (e.g., window glass) which has a controlling device to prevent faulty operation and maintain

stability, as taught by Iwata (see abstract, col. 2, lines 30-62; col. 11, line 64 - col. 12, line 3).

The combination of Lim and Iwata fails to disclose having the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node. However, the examiner maintains that the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node was well known in the art, as taught by Lemirande.

Lemirande further discloses the feature by using a current sensing resistor (R44) located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node (see col. 2, lines 6-10; col. 4, lines 9-18, 29-30, 55-62, abstract; Figs. 2, 4), where the load monitoring circuit (34) includes a current sensing resistor (R44) for monitoring the difference of the current flowing from one node (e.g., endpoint) of the resistor to the other node in which current flow is in proportion to the amount of power (e.g., voltage) supplied to the motor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata with Lemirande to have the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first

voltage applied to the first node and a second voltage applied to the second node, as taught by Lemirande (see col. 1, line 67 - col. 2, line 2; col. 7, lines 61-64).

Regarding **Claim 7**, Lim teaches a method for controlling opening/closing of a sub-body in a foldable portable wireless terminal (1) having at least a main body (3), a sub-body (2) installed on the main body (3) so as to be openable and closable, a first sensor (51) for sensing a complete opening of the sub-body from the main body (3), and a second sensor (52) for sensing a complete closing of the sub-body (2) onto the main body (3) (see abstract; col. 4, lines 55 - col. 5, line 24; col. 6, lines 48 - col. 7, line 49; Figs. 5-10, 6, and 10-12), the method comprising the steps of:

controlling opening/closing of the sub-body (see abstract; col. 4, lines 55 - col. 5, line 24; col. 6, lines 48 - col. 7, line 49; Figs. 5-10, 6, and 10-12), where the switch operates the motor to open/close the folder (2)

returning the sub-body (2) to an initial state (see col. 10, lines 20-25), where the folder (2) is moved to an initial position. Lim fails to disclose having the features determining an overloaded state of a motor housed inside of the terminal based on the current supplied to the housed motor if incomplete opening/closing of the sub-body is sensed by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node; controlling opening/closing of the sub-body repeatedly as many times as predetermined if incomplete opening/closing of the sub-body has been sensed and the housed motor is in an overloaded state; and returning the sub-body to an initial state if incomplete opening/closing of the sub-body is sensed and the overloaded

state continues even after the controlling has been repeated the predetermined times.

However, the examiner maintains that the features determining an overloaded state of a motor housed inside of the terminal based on the current supplied to the housed motor if incomplete opening/closing of the sub-body is sensed; controlling opening/closing of the sub-body repeatedly as many times as predetermined if incomplete opening/closing of the sub-body has been sensed and the housed motor is in an overloaded state; and returning the sub-body to an initial state if incomplete opening/closing of the sub-body is sensed and the overloaded state continues even after the controlling has been repeated the predetermined times was well known in the art, as taught by Iwata.

Iwata further teaches of having the following:

determining an overloaded state of a motor (12) housed inside of the terminal based on the current supplied to the housed motor (12) if incomplete opening/closing (raising/lowering) of the sub-body is sensed (see col. 6, lines 11-15; col. 7, line 51 - col. 8, line 62; Fig. 1), where a foreign object is detected to prevent the raising/lowering of the window and the motor is controlled according to the overload condition;

controlling opening/closing of the sub-body repeatedly as many times as predetermined if incomplete opening/closing of the sub-body has been sensed and the housed motor is in an overloaded state (see col. 7, line 25 - col. 9, line 55; col. 21, line 41 - col. 23, line 22; Fig. 2a-3d; 12a-13d), where the motor continuously attempts to close a certain amount a times based on the timer before reversing operation and stopping; and

returning the sub-body to an initial state if incomplete opening/closing of the sub-body is sensed and the overloaded state continues even after the controlling has been repeated the

predetermined times (see col. 7, line 25 - col. 9, line 55; col. 21, line 41 - col. 23, line 22; Fig. 2a-3d; 12a-13d), where the motor returns the window to an initial state after continuous attempts to close/open a certain amount a times based on the timer before reversing operation and stopping.

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata to have the features determining an overloaded state of a motor housed inside of the terminal based on the current supplied to the housed motor if incomplete opening/closing of the sub-body is sensed by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node; controlling opening/closing of the sub-body repeatedly as many times as predetermined if incomplete opening/closing of the sub-body has been sensed and the housed motor is in an overloaded state; and returning the sub-body to an initial state if incomplete opening/closing of the sub-body is sensed and the overloaded state continues even after the controlling has been repeated the predetermined times, in order to have a motor that that is capable of raising/lowering (opening/closing) an object (e.g., window glass) which has a controlling device to prevent faulty operation and maintain stability (see Iwata - abstract, col. 2, lines 30-62; col. 11, line 64 - col. 12, line 3). The combination of Lim and Iwata fails to disclose having the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second

node. However, the examiner maintains that the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node was well known in the art, as taught by Lemirande.

Lemirande further discloses the feature by using a current sensing resistor (R44) located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node (see col. 2, lines 6-10; col. 4, lines 9-18, 29-30, 55-62, abstract; Figs. 2, 4), where the load monitoring circuit (34) includes a current sensing resistor (R44) for monitoring the difference of the current flowing from one node (e.g., endpoint) of the resistor to the other node in which current flow is in proportion to the amount of power (e.g., voltage) supplied to the motor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata with Lemirande to have the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node, as taught by Lemirande (see col. 1, line 67 - col. 2, line 2; col. 7, lines 61-64).

Regarding **Claim 8**, Lim teaches a method for controlling opening/closing of a sub-body in an automatically and manually folded portable wireless terminal (1) having at least a main body (3), a sub-body (2) installed on the main body (2) so as to be openable and

closable, and a sensor (50) for sensing a complete opening of the sub-body from the main body, the method comprising the steps of:

determining whether or not the sensor (50) senses a complete opening of the sub-body during automatic opening (see abstract; col. 4, line 55 - col. 5, line 24; col. 6, line 48 - col. 7, line 49; and as shown in Figs. 5-6 and 10-12). Lim fails to disclose having the features determining an overloaded state of a motor housed inside of the terminal based on current supplied to the housed motor if incomplete opening is sensed by the sensor and by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node; controlling opening of the sub-body as many times as predetermined if incomplete opening is sensed and the housed motor is determined to be in an overloaded state; and ceasing operation of the housed motor if incomplete opening of the sub-body is sensed and the overloaded state of the housed motor continues even after controlling the opening of the sub-body the predetermined times. However, the examiner maintains that the features determining an overloaded state of a motor housed inside of the terminal based on current supplied to the housed motor if incomplete opening is sensed by the sensor; controlling opening of the sub-body as many times as predetermined if incomplete opening is sensed and the housed motor is determined to be in an overloaded state; and ceasing operation of the housed motor if incomplete opening of the sub-body is sensed and the overloaded state of the housed motor continues even after controlling the opening of the sub-body the predetermined times was well known in the art, as taught by Iwata.

Iwata further teaches of having the features

determining an overloaded state of a motor (12) housed inside of the terminal based on current supplied to the housed motor (12) if incomplete opening is sensed by the sensor (see col. 6, lines 11-15; col. 7, line 51 - col. 8, line 62; Fig. 1), where a foreign object is detected to prevent the raising/lowering of the window and the motor is controlled according to the overload;

controlling opening of the sub-body as many times as predetermined if incomplete opening is sensed and the housed motor (12) is determined to be in an overloaded state (see col. 7, line 25 - col. 9, line 55; col. 21, line 41 - col. 23, line 22; Fig. 2a-3d; 12a-13d), where the motor continuously attempts to close/open a certain amount a times based on the timer before reversing operation and stopping; and

ceasing operation of the housed motor (12) if incomplete opening of the sub-body is sensed and the overloaded state of the housed motor (12) continues even after controlling the opening of the sub-body the predetermined times (see col. 7, line 25 - col. 9, line 55; col. 21, line 41 - col. 23, line 22; Fig. 2a-3d; 12a-13d), where the motor stops operation after continuously attempting to close/open a certain amount a times based on the timer.

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata to have the features determining an overloaded state of a motor housed inside of the terminal based on current supplied to the housed motor if incomplete opening is sensed by the sensor; controlling opening of the sub-body as many times as predetermined if incomplete opening is sensed and the housed motor is determined to be in an overloaded state; and ceasing operation of the

housed motor if incomplete opening of the sub-body is sensed and the overloaded state of the housed motor continues even after controlling the opening of the sub-body the predetermined times, in order to have a motor that is capable of raising/lowering (opening/closing) an object (e.g., window glass) which has a controlling device to prevent faulty operation and maintain stability (see Iwata - abstract, col. 2, lines 30-62; col. 11, line 64 - col. 12, line 3). The combination of Lim and Iwata fails to disclose having the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node. However, the examiner maintains that the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node was well known in the art, as taught by Lemirande.

Lemirande further discloses the feature by using a current sensing resistor (R44) located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node (see col. 2, lines 6-10; col. 4, lines 9-18, 29-30, 55-62, abstract; Figs. 2, 4), where the load monitoring circuit (34) includes a current sensing resistor (R44) for monitoring the difference of the current flowing from one node (e.g., endpoint) of the resistor to the other node in which current flow is in proportion to the amount of power (e.g., voltage) supplied to the motor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata with Lemirande to have the feature by using a current sensing resistor located between a first node and a second node and determining an overload condition of the motor based on a difference between a first voltage applied to the first node and a second voltage applied to the second node, as taught by Lemirande (see col. 1, line 67 - col. 2, line 2; col. 7, lines 61-64).

Allowable Subject Matter

4. **Claim 2** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding **Claim 2**, the applied references fail to disclose or render the obvious, the automatically and manually folded portable wireless terminal of claim 1, wherein the motor overcurrent monitoring section comprises: the first node connected to a battery output line for applying a first voltage corresponding to the battery voltage to a first input end of the control device; the second node connected between the first node and the motor for applying a second voltage, which corresponds to a current supplied to the motor, to a second input end of the control device; and the current sensing resistor located between the first node and the second node for sensing the current supplied to the motor from the first node through the second node.

Response to Arguments

5. Applicant's arguments with respect to claims 1-2 and 4-8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion


6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
- a. **Nishibe et al. (US 5,453,669)** discloses *Motor Current Detection Circuit*.
 - b. **Kates et al. (US 6,130,813)** discloses *Protection Circuit For Electronic Devices*.
 - c. **Andersson et al. (US 4,528,608)** discloses *Electronic Current Interrupter Included In a DC Distribution System*.
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Willie J. Daniel, Jr. whose telephone number is (571) 272-7907. The examiner can normally be reached on 7:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2686

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WJD,JR
05 August 2005



CHARLES APPIAH
PRIMARY EXAMINER